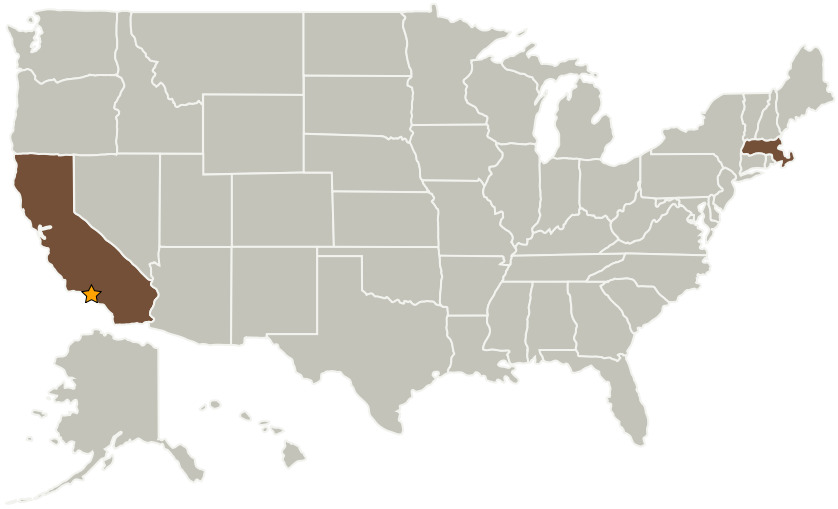
Flexible T/R Modules for Large-Aperture, Space-Based SAR, Phase I

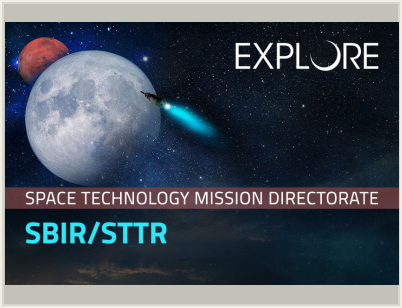
Completed Technology Project (2005 - 2005)

Project Introduction

SI2 Technologies, Inc (SI2) proposes to develop membrane compatible transmit/receive (T/R) modules for flexible, space-deployable synthetic aperture radar (SAR) antenna arrays. Large-aperture, yet lightweight SARs are desired for many Earth science monitoring applications as they may be placed at higher orbits which offer greater coverage and shorter interferometric repeat times. However, the technology for manufacturing T/R modules on flexible membranes has limited the development of these space based arrays. SI2's innovation is to apply its laser transfer Direct Write techniques to fabricate a flexible T/R module which can be integrated with each array element. SI2's proprietary laser transfer processes will be used to "print" pre-fabricated active electronics (e.g. conventional semiconductor devices such as amplifiers, switches, etc.) on large area, flexible substrates directly from off-the-shelf wafers. The result of the proposed effort will be a demonstrated pathway for manufacturing T/R modules on flexible substrates which will further the development of lightweight, large-aperture, electronically-steerable space based radar arrays.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
SI2 Technologies, Inc.	Supporting Organization	Industry	Billerica, Massachusetts

Primary U.S. Work Locations	
California	Massachusetts

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Erik Handy

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.1 Materials
    - TX12.1.3 Flexible Material Systems